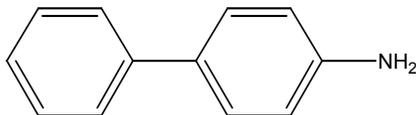


## 4-AMINOBIPHENYL

CAS No. 92-67-1

First Listed in the *First Annual Report on Carcinogens*



### CARCINOGENICITY

4-Aminobiphenyl is *known to be a human carcinogen* based on sufficient evidence of carcinogenicity in humans (IARC 1972, 1979, 1982, 1987). The extent of urinary bladder cancer risk associated with exposure to 4-aminobiphenyl was first documented by a descriptive study in which 19 of 171 men exposed to the compound developed urinary bladder tumors. In another survey of cancer mortality among workers at a chemical plant producing a variety of chemicals, a ten-fold increase in mortality from urinary bladder cancer was reported (IARC 1972).

An IARC Working Group reported that there is sufficient evidence of carcinogenicity of 4-aminobiphenyl in experimental animals (IARC 1972, 1979, 1982, 1987). When administered by gavage, 4-aminobiphenyl induced carcinoma of the urinary bladder in mice and rabbits. When administered in the diet, 4-aminobiphenyl induced neoplasms at various sites, including dose-related increases in the incidence of angiosarcomas in mice. When administered in the diet, the compound induced carcinoma of the urinary bladder in dogs. When administered by subcutaneous injection, 4-aminobiphenyl induced mammary gland and intestinal tumors in rats, and hepatomas in newborn mice of both sexes (IARC 1972).

### PROPERTIES

4-Aminobiphenyl occurs as colorless crystals that turn purple on contact with air and have a floral odor. It is slightly soluble in water and soluble in alcohol, ether, chloroform, and lipids. This chemical is oxidized by air and is sensitive to heat (HSDB 2000).

### USE

4-Aminobiphenyl presently has no commercial use in the United States, although it was formerly used as a rubber antioxidant, a dye intermediate, a research chemical, and in the detection of sulfates (HSDB 2000).

### PRODUCTION

Due to its carcinogenic effects, 4-aminobiphenyl is no longer produced commercially in the United States (HSDB 2000). Eight U.S. suppliers of 4-aminobiphenyl were identified in 2001 (Chem Sources 2001).

## EXPOSURE

Exposure to 4-aminobiphenyl appears to be extremely limited. Mainstream cigarette smoke is reported to contain 4.6 ng/cigarette of 4-aminobiphenyl, while sidestream smoke contains 140 ng/cigarette of the chemical (Patrianakos and Hoffmann 1979). EPA's Toxic Chemical Release Inventory (TRI) listed one industrial facility that reported releasing 13 lb 4-aminobiphenyl through underground injection in 1999 (TRI99 2001).

## REGULATIONS

EPA regulates 4-aminobiphenyl under the Resource Conservation and Recovery Act (RCRA) as a hazardous constituent of waste and under Title III of Superfund Amendments and Reauthorization Act (SARA). A reportable quantity (RQ) of 1 lb (0.454 kg) has been established for the compound.

FDA, under the Food, Drug, and Cosmetic Act (FD&CA), regulates 4-aminobiphenyl as a contaminant in food and color additives. FDA has published a listing of color additives certified for external uses, and regulates the level of 4-aminobiphenyl as a contaminant in these color additives.

NIOSH recommends the lowest feasible concentration as the exposure limit. OSHA regulates 4-aminobiphenyl under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 10.

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